C. 996/987

Preprint from the 1987

BUREAU OF MINES MINERALS YEARBOOK

The Mineral Industry of Czechoslovakia

UNITED STATES DEPARTMENT OF THE INTERIOR

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This publication is a chapter from the current Bureau of Mines Minerals Yearbook, comprising *Volume I, Metals and Minerals; Volume II, Area Reports: Domestic; Volume III, Area Reports: International.* The separate volumes of the Yearbook are sold by the Superintendent of Documents, Washington, D.C. 20402.

The Mineral Industry of Czechoslovakia

By John G. Panulas[1]

Although Czechoslovakia continued to be a significant producer of gallium, graphite, kaolin, magnesite, and steel in 1987, it remained dependent on imports for its supply of other mineral commodities. Having limited petroleum and gas resources, the country exploited numerous uranium deposits in North Bohemia, with a view toward developing its nuclear power capability as a major source of energy. Automation of the country's iron and steel industry was undertaken to improve product quality and increase productivity. Although preliminary statistics indicate that industrial production grew by 2.3% and national income by 2%, mining activities took place within a milieu of overproduction in energy-intensive industries and excess inventory buildup.

Government Policies and Programs.—The Government's economic restructuring program, "prestavba," called for improved efficiency, productivity, and profitability through the importation of energy-conserving machines, and the introduction of a new management approach that placed increased responsibility and decisionmaking authority with individual managers and enterprises.

A major element of Government policy was that the Czechoslovak industry no longer would manufacture everything the nation required. Rather, it would specialize in those goods it could produce at relatively low cost, export easily, and use to generate the hard currency it needed to buy capital goods for industry. As part of the new system, export of raw minerals, semimanufactures, and petrochemical products would diminish in favor of metallic products with added value, nonpetroleum chemical products, electronics, microelectronics, and robotics.

PRODUCTION

Output of gallium and graphite each amounted to about 8% of the world total. Production of magnesite accounted for approximately 6% of the whole; kaolin, roughly 3%; and, pig iron and steel, each about 2%. The Ostrava-Karvina Basin continued as the major source of bituminous coal while the North Bohemian Basin provided the bulk of brown coal. The Vitkovice steel plant in North Moravia supplied most of the steel output. The majority of kaolin was produced around Karlovy Vary, West Bohemia. In addition, six magnesite mines were operating in Slovakia.

Table 1.—Czechoslovakia: Production of mineral commodities[1]

(Metric tons unless otherwise specified)

Commodity	1983	1984	1985	1986[p]	1987[e]
METALS					
Aluminum:					
Alumina	80,000	85,000	[e]85,000	[e]80,000	85,000
Aluminum ingot, primary only	36,156	31,635	31,000	33,078	33,000
Antimony, mine output, Sb content	900	1,000	[e]1,000	[e]1,000	1,000
Copper:					
Mine output, Cu content	9,800	10,000	[e]10,300	[e]10,000	10,000
Metal:					
Smelter, primary only	10,000	10,000	[e]10,200	[e]9,800	10,000
Refined including secondary	25,746	26,068	[e]26,500	[e]25,000	[3]27,202
Iron and steel:					
Iron ore:					
Gross weight thousand tons	1,903	1,869	1,859	1,784	[3]1,798
Fe content do	490	481	[e]490	470	470
Metal:					
Pig iron do	9,466	9,561	9,562	9,573	[3]9,788
Ferroalloys, electric-furnace do	162	151	161	160	[3]2,039
Steel, crude do	15,024	14,831	15,036	15,112	[3]15,415
Semimanufactures do	12,254	12,431	[e]12,700	[3]12,000	[3]11,364
Lead:					
Mine output, Pb content	3,162	3,078	5,244	5,700	3,200
Metal including secondary	21,030	21,134	21,437	23,602	[3]26,008
Manganese ore, gross weight[e 3]	900	900	950	900	900
Mercury 76-pound flasks	4,177	4,409	4,583	4,873	[3]4,757
Nickel metal, primary[e]	3,000	4,500	4,500	4,500	4,500
Silver thousand troy ounces	964	1,029	[e]1,000	[e]1,000	1,000
Tin:					
Mine output, Sn content	200	200	[e]200	[e]200	250
Metal including secondary	307	425	507	240	430
Tungsten, mine output, W content[e]	50	50	50	[r]50	45
Zinc:					
Mine output, Zn content	7,064	7,185	[e]7,300	[e]7,300	7,300
Metal including secondary[e]	9,100	9,100	9,250	9,250	9,300
INDUSTRIAL MINERALS					
Barite[e]	60,000	60,000	60,000	60,000	60,000
Cement, hydraulic thousand tons	10,498	10,530	10,265	10,298	[3]10,369
Clays: Kaolin do	539	540	548	546	575
Fluorspar[e] do	96	96	95	95	95
Graphite[e] do	50	50	60	60	55
Gypsum and anhydrite, crude do	848	842	772	743	[3]771
Lime, hydrated and quicklime do	3,100	3,117	3,227	3,329	[3]3,237
Magnesite, crude do	662	660	[e]670	[e]680	[3]671
Nitrogen: N content of ammonia do	591	576	526	[3]614	600
Perlite do	44	[e]44	[e]44	[e]44	[3]42
Pyrite, gross weight[e] do	140	140	145	140	140
Salt do	240	243	[e]245	[e]250	250
Sodium compounds, n.e.s.:					
Caustic soda do	332	327	331	335	332
Carbonate, manufactured do	95	101	112	113	102
Stone:					
Limestone and other calcareous stone do	23,519	23,684	23,252	23,556	[3]22,927
Quarry stone, not further described thousand cubic meters	32,844	32,274	32,269	32,826	32,000
Sulfur:					
Native[e] thousand tons	5	5	6	5	5
From pyrites[e] do	60	60	62	60	[3]38
Byproducts, all sources[e] do	10	10	12	10	10
Total[e] do	75	75	80	75	53
Sulfuric acid do	1,244	1,246	1,297	1,292	1,300
MINERAL FUELS AND RELATED MATERIALS					
Coal:					
Bituminous do	26,315	26,421	26,223	25,658	26,000
Brown and lignite do	98,878	102,857	102,315	102,738	103,000
Coke:					
Metallurgical do	8,529	8,211	8,112	8,005	8,200
Unspecified do	1,811	2,091	2,125	2,068	2,100
Fuel briquets from brown coal do	1,104	1,069	1,118	1,093	1,000
Gas:					
Manufactured, all types million cubic feet	268,532	271,710	264,859	255,854	260,000
Natural, marketed[e 4] do	26,000	24,500	24,500	24,700	25,000

See footnotes at end of table.

Table 1.—Czechoslovakia: Production of mineral commodities[1] —Continued

(Metric tons unless otherwise specified)

Commodity	1983	1984	1985	1986[p]	1987[e]
MINERAL FUELS AND RELATED MATERIALS —Continued					
Petroleum:					
Crude:					
As reported ..... thousand tons	93	95	123	142	140
Converted ... thousand 42-gallon barrels	629	644	834	963	970
Refinery products ..... do	[3]122,785	125,000	[r]127,500	125,000	126,000

[e]Estimated. [p]Preliminary. [r]Revised.

[1]Table includes data available through Sept. 1988. In addition to the commodities listed, arsenic, feldspar, gold, graphite, uranium, and a variety of other petroleum products are produced, but information is inadequate to make reliable estimates of output levels.

[2]Reported figure.

[3]This material, although reported as manganese ore, is believed to be manganiferous iron ore with a manganese content of about 17% and as such is not equivalent to material ordinarily reported as manganese ore, which generally contains 25% or more manganese.

[4]Includes gas produced from coal mines. Gross output of natural gas is not reported, but it is believed to exceed reported marketed output by a relatively inconsequential amount.

TRADE

Hard currency exports fell 4.4% below 1986 levels, as trade with other member states of the Council for Mutual Economic Assistance (CMEA) rose to 80% of Czechoslovakia's total world commerce. The Soviet Union continued as Czechoslovakia's largest trading partner, providing the bulk of its chromium, ferroalloys, iron ore, manganese, natural gas, nitrogen fertilizer, petroleum, pig iron, and nonferrous metals. Particularly notable was the fact that the Soviet Union was to supply Czechoslovakia with 1.33 million tons per year of iron ore pellets for 10 years as payment for its continuing work in building an iron treatment plant at Krivoj Rog, in the Ukraine, U.S.S.R. Imports would therefore increase to sustain the long-term Government plan of reduced iron and steel output. Czechoslovakia's 1986-90 5-year plan called for a 20% increase in total exports by 1990, in order to attain national income growth of 4%. In its effort to achieve this, the country increased exports of mineral commodities to its largest nonsocialist trading partners, Austria and the Federal Republic of Germany, and sought improved trade relations with Belgium, Denmark, Finland, France, Italy, the Netherlands, and Norway.

Table 2.—Czechoslovakia: Apparent exports of mineral commodities[1]

(Metric tons unless otherwise specified)

Commodity	1985	1986[p]	Destinations, 1986	
			United States	Other (principal)
METALS				
Aluminum:				
Ore and concentrate	22			
Oxides and hydroxides	34	24	--	All to Netherlands.
Ash and residue containing aluminum	547	106	--	All to West Germany.
Metal including alloys:				
Scrap	259	330	206	West Germany 124.
Unwrought	21,070	15,259	--	Japan 10,769; West Germany 2,203; Poland 2,063.
Semimanufactures	2,534	3,020	--	Poland 2,121; Hungary 433; West Germany 159.
Chromium: Oxides and hydroxides	31	--		
Copper:				
Ore and concentrate	1,184			
Sulfate	2,756	2,213	--	West Germany 1,557; France 408; Switzerland 105.
Ash and residue containing copper	--	145	--	All to West Germany.
Metal including alloys:				
Scrap	90	382	--	West Germany 312; Sweden 70.
Unwrought	5,	3,699	--	All to West Germany.
Semimanufactures	201	66	--	Yugoslavia 40; West Germany 22; Peru 2.

See footnote at end of table.

Table 2.—Czechoslovakia: Apparent exports of mineral commodities[1] —Continued

(Metric tons unless otherwise specified)

Commodity	1985	1986[p]	Destinations, 1986: United States	Destinations, 1986: Other (principal)
METALS —Continued				
Gold: Waste and sweepings value, thousands	$105	$263		All to West Germany.
Iron and steel:				
Iron ore and concentrate excluding roasted pyrite		772		All to Hungary.
Metal:				
Scrap	140,229	101,624		Italy 41,222; Austria 26,495; West Germany 22,446.
Pig iron, cast iron, related materials	2,780	3,127		West Germany 1,624; Sweden 591; Denmark 301.
Ferroalloys:				
Ferrochromium	1,261	442		West Germany 425; Yugoslavia 17.
Ferromanganese		3,680		All to Hungary.
Ferrosilicomanganese	15,768	15,843		West Germany 10,532; Sweden 1,854; Italy 1,805.
Ferrosilicon	144	739		All to West Germany.
Silicon metal	37			
Unspecified	8,533	4,361		Austria 3,809; Hungary 552.
Steel, primary forms[2] thousand tons	571	533		Yugoslavia 274; Bulgaria 135; West Germany 20.
Semimanufactures:				
Bars, rods, angles, shapes, sections do.	1,384	1,493	15	West Germany 128; Poland 81; unspecified 990.
Universals, plates, sheets do.	1,010	1,048	11	Yugoslavia 145; Poland 115; West Germany 89.
Hoop and strip do.	156	151		West Germany 13; Italy 9; unspecified 115.
Rails and accessories do.	34	45		NA.
Wire do.	133	119		West Germany 22; Hungary 10; unspecified 75.
Tubes, pipes, fittings[3] do.	631	626	3	U.S.S.R. 408; Poland 45; Hungary 25.
Castings and forgings, rough do.	22	22		NA.
Lead:				
Ore and concentrate	5,943	6,141		All to West Germany.
Metal including alloys, scrap	23	8,625		Do.
Magnesium: Metal including alloys, unwrought		680		All to Jordan.
Manganese: Ore and concentrate, metallurgical-grade		1		All to West Germany.
Nickel:				
Oxides and hydroxides	78	23		West Germany 10; France 5; Netherlands 5.
Ash and residue containing nickel		66		All to West Germany.
Metal including alloys:				
Scrap	53	33		Do.
Unwrought	2			
Semimanufactures		20		All to Yugoslavia.
Platinum-group metals:				
Waste and sweepings value, thousands	$98	$1,420		West Germany $1,405; United Kingdom $15.
Metals including alloys, unwrought and partly wrought do.	$971	$4,602	$3,165	Yugoslavia $999; West Germany $438.
Silver: Metal including alloys, unwrought and partly wrought do.	$344	$321		All to West Germany.
Tin:				
Oxides		20		All to Italy.
Ash and residue containing tin	241	77		All to United Kingdom.
Titanium: Oxides	2,314	2,836		West Germany 986; Italy 963; United Kingdom 467.
Tungsten: Metal including alloys, all forms		3		All to Yugoslavia.
Uranium and/or thorium: Metal including alloys, all forms	1			
Zinc:				
Ore and concentrate	15,651	14,167		Do.
Oxides	938	886		Yugoslavia 710; West Germany 145; Italy 20.
Ash and residue containing zinc	4,707	3,581		West Germany 3,501; Belgium-Luxembourg 80.
Metal including alloys:				
Scrap	108	151		All to West Germany.
Unwrought	25			
Semimanufactures	163			

See footnotes at end of table.

Table 2.—Czechoslovakia: Apparent exports of mineral commodities[1] —Continued

(Metric tons unless otherwise specified)

Commodity	1985	1986[p]	Destinations, 1986	
			United States	Other (principal)
METALS —Continued				
Other:				
Ashes and residues	3,297	103		West Germany 101; United Kingdom 2.
Base metals including alloys, all forms	1	6		Yugoslavia 3; West Germany 1; Japan 1.
INDUSTRIAL MINERALS				
Abrasives, n.e.s.:				
Natural: Corundum, emery, pumice, etc		44		Belgium-Luxembourg 24; Austria 20.
Artificial:				
Corundum	4,286	4,358		Italy 2,555; West Germany 720; Netherlands 360.
Silicon carbide	500	886		West Germany 669; Belgium-Luxembourg 163; Italy 54.
Grinding and polishing wheels and stones	349	487		Italy 207; Belgium-Luxembourg 75; West Germany 64.
Asbestos, crude	36			
Barite and witherite	2,003	1,466		Austria 1,441; Belgium-Luxembourg 25.
Boron materials: Crude natural borates	20			
Cement[2] thousand tons	366	197		West Germany 104; Poland 24; Yugoslavia 16.
Chalk	43	21		All to Denmark.
Clays, crude:				
Bentonite		20		All to Italy.
Chamotte earth	26,636	77,432		Hungary 59,817; Italy 12,038; West Germany 4,070.
Fire clay	43,278	43,501		All to Yugoslavia.
Kaolin[2]	386,000	383,000		West Germany 141,000; Poland 70,000; Yugoslavia 37,000.
Unspecified	117,285	146,765		West Germany 93,681; Hungary 44,568; Sweden 3,364.
Diamond: Gem, not set or strung value, thousands		$4,808	$4,808	
Diatomite and other infusorial earth	4,050	4,841		All to Austria.
Feldspar, fluorspar, related materials	320	520		All to Yugoslavia.
Fertilizer materials:				
Crude, n.e.s.	97			
Manufactured:				
Ammonia	5,245	4,684		West Germany 3,027; Switzerland 1,534; Poland 123.
Nitrogenous, N_2 content[3]	436,000	455,000		NA.
Potassic	112			
Unspecified and mixed	80	30,880		Austria 30,583; Yugoslavia 150; Finland 60.
Graphite, natural	1,746	2,838		Poland 1,427; Yugoslavia 1,391; Greece 20.
Gypsum and plaster		2		All to West Germany.
Kyanite and related materials	20			
Lime	27,774	61,445	21	Hungary 47,131; West Germany 14,293.
Magnesium compounds:				
Magnesite, crude	2,974			
Oxides and hydroxides[2] thousand tons	446	305	11	Hungary 78; Poland 70; West Germany 42.
Mica:				
Crude including splittings and waste	11			
Worked including agglomerated splittings	82	94		Yugoslavia 51; United Kingdom 15; Italy 11.
Pigments, mineral: Iron oxides and hydroxides, processed	1,401	1,167		Italy 1,067; Yugoslavia 100.
Precious and semiprecious stones other than diamond:				
Natural value, thousands	$276	$148		Hong Kong $134; Singapore $9; Switzerland $4.
Synthetic do.	$26	$363		Canada $286; Yugoslavia $35; Italy $24.
Pyrite, unroasted	20,766	13,871		All to Hungary.
Salt and brine	2,064	1,848		Hungary 1,844; West Germany 4.
Sodium compounds, n.e.s.:				
Carbonate, manufactured	[3]12,900	[3]14,700		West Germany 9,603; Yugoslavia 3,371; United Kingdom 592.
Sulfate, manufactured	567	382		Switzerland 220; Canada 162.

See footnotes at end of table.

Table 2.—Czechoslovakia: Apparent exports of mineral commodities[1] —Continued

(Metric tons unless otherwise specified)

Commodity	1985	1986[p]	Destinations, 1986	
			United States	Other (principal)
INDUSTRIAL MINERALS —Continued				
Stone, sand and gravel:				
Dimension stone:				
Crude and partly worked	--	8,115	--	Poland 6,290; West Germany 1,169; Yugoslavia 396.
Worked	9,428	14,449	--	West Germany 14,447; Finland 2.
Gravel and crushed rock	7,654	7,932	--	West Germany 4,798; Poland 2,550; Austria 501.
Limestone other than dimension	26,792	28,953	--	All to West Germany.
Quartz and quartzite	--	3	--	Do.
Sand other than metal-bearing	263,776	282,977	--	Austria 163,423; Hungary 84,811; Yugoslavia 21,674.
Sulfur:				
Elemental, crude including native and byproduct	10,289	24	--	All to West Germany.
Sulfuric acid[3]	10,600	20,900	--	NA.
Talc, steatite, soapstone, pyrophyllite	6,549	6,790	--	Poland 6,555; Yugoslavia 212; Portugal 23.
Vermiculite, perlite, chlorite	--	989	--	All to West Germany.
Other:				
Crude	29,584	29,128	--	Hungary 18,262; Austria 5,262; West Germany 5,178.
Slag and dross, not metal-bearing	12,317	12,642	--	All to West Germany.
MINERAL FUELS AND RELATED MATERIALS				
Carbon black	110	328	--	West Germany 301; Hungary 25; Sweden 2.
Coal:				
Anthracite and bituminous[3] thousand tons	2,676	2,539	--	East Germany 762; Austria 600; Romania 431.
Briquets of anthracite and bituminous coal do	--	4	--	Mainly to Hungary.
Lignite including briquets[3] do	2,832	2,814	--	West Germany 2,480; Yugoslavia 15; Austria 11.
Coke and semicoke[3] do	1,157	1,002	--	East Germany 398; Austria 304; Hungary 170.
Gas, natural: Gaseous[3] million cubic feet	--	12,289	--	NA.
Peat including briquets and litter	222	457	--	Denmark 233; Greece 210; Italy 14.
Petroleum refinery products:				
Liquefied petroleum gas thousand 42-gallon barrels	998	1,107	(4)	West Germany 836; Austria 140; Italy 118.
Gasoline do	931	1,029	--	West Germany 706; Austria 186; Italy 82.
Mineral jelly and wax do	(4)	26	--	Austria 20; Netherlands 5.
Kerosene and jet fuel do	630	439	--	West Germany 267; Austria 130; Yugoslavia 82.
Distillate fuel oil do	1,385	[3]1,786	--	West Germany 1,261; Netherlands 238; Austria 188.
Lubricants do	776	1,299	--	Austria 1,094; Yugoslavia 77; West Germany 41.
Residual fuel oil do	4,477	4,783	--	Austria 2,701; West Germany 2,082.
Bitumen and other residues do	21	25	--	Austria 18; West Germany 7.

[p]Preliminary. NA Not available.

[1]Table prepared by Jozef Plachy. Owing to a lack of official trade data published by Czechoslovakia, this table should not be taken as a complete presentation of this country's mineral trade. Unless otherwise specified, these data have been compiled from United Nations information and data published by trading partner countries.

[2]Official Trade Statistics of Czechoslovakia.

[3]Statistical Yearbook of Members of the Council for Mutual Economic Assistance, Moscow, U.S.S.R.

[4]Less than 1/2 unit.

Table 3.—Czechoslovakia: Apparent imports of mineral commodities[1]

(Metric tons unless otherwise specified)

Commodity	1985	1986[p]	Sources, 1986	
			United States	Other (principal)
METALS				
Alkali and alkaline-earth metals:				
Alkaline-earth metals	--	1	--	All from France.
Aluminum:				
Ore and concentrate[2] thousand tons	356	399	--	Hungary 265; Yugoslavia 107.
Oxides and hydroxides	24,842	25,431	--	Hungary 15,016; Yugoslavia 10,209; West Germany 108.
Metal including alloys:				
Scrap	452	130	--	Hungary 80; West Germany 50.
Unwrought[3]	80,000	78,000	--	U.S.S.R. 66,000; Yugoslavia 9,000; Hungary 1,000.
Semimanufactures	21,155	19,014	--	Yugoslavia 15,308; Hungary 3,050; Austria 192.
Antimony: Oxides	--	20	--	France 15; West Germany 5.
Cadmium: Metal including alloys, all forms[3]	164	170	--	Bulgaria 40; Finland 40; Hungary 29.
Chromium:				
Ore and concentrate[2] thousand tons	174	188	--	U.S.S.R. 130; Cuba 20, Albania 19.
Oxides and hydroxides	761	868	--	U.S.S.R. 499; United Kingdom 365; France 4.
Cobalt: Oxides and hydroxides	2	6	--	All from United Kingdom.
Columbium and tantalum: Metal including alloys, all forms, columbium (niobium)	1	1	--	All from West Germany.
Copper: Metal including alloys:				
Scrap	265			
Unwrought[3]	67,000	65,000	--	U.S.S.R. 36,000; United Kingdom 14,000; Poland 10,000.
Semimanufactures	21,279	25,660	--	Poland 19,795; Yugoslavia 3,511; West Germany 1,192.
Gold: Metal including alloys, unwrought and partly wrought value thousands	$534	$508	--	West Germany $453; Italy $43; United Kingdom $12.
Iron and steel:				
Iron ore and concentrate excluding roasted pyrite[2] thousand tons	11,268	11,264	--	U.S.S.R. 9,310; Brazil 859; Venezuela 296.
Metal:				
Scrap do	44	43	--	Yugoslavia 39; U.S.S.R. 3; Austria 1.
Pig iron, cast iron, related materials[3] do	869	809	--	U.S.S.R. 807.
Ferroalloys:				
Ferrochromium	3,169	910	--	Italy 528; West Germany 382.
Ferromanganese	10	15	--	All from West Germany.
Ferrosilicomanganese	25			
Ferrosilicon	232	5	--	All from France.
Silicon metal	7	28	--	Italy 20; United Kingdom 8.
Unspecified	3,389	2,895	--	Sweden 1,324; West Germany 582; United Kingdom 531.
Steel, primary forms thousand tons	318	165	--	NA.
Semimanufactures:				
Bars, rods, angles, shapes sections do	193	151	(4)	Yugoslavia 6; Hungary 4; unspecified 140.
Universals, plates, sheets do	140	128	--	Bulgaria 24; Austria 6; unspecified 89.
Hoop and strip do	18	17	--	West Germany 3; Hungary 3; unspecified 11.
Rails and accessories do	5	5	--	NA.
Wire do	3	3	--	West Germany 1; Yugoslavia 1.
Tubes, pipes, fittings do	150	441	--	West Germany 109; Italy 18; unspecified 308.
Castings and forgings, rough do	9	8	--	NA.
Lead:				
Oxides	1,051	811	--	All from France.
Metal including alloys:				
Scrap	494			
Unwrought[3]	25,000	25,000	--	Yugoslavia 10,000; United Kingdom 4,000; West Germany 3,000.
Semimanufactures	40	1	--	All from United Kingdom.

See footnotes at end of table.

Table 3.—Czechoslovakia: Apparent imports of mineral commodities[1] —Continued

(Metric tons unless otherwise specified)

Commodity	1985	1986[p]	Sources, 1986	
			United States	Other (principal)
METALS —Continued				
Magnesium: Metal including alloys:				
Scrap	2	9	--	All from West Germany.
Unwrought	112	47	--	Italy 25; Yugoslavia 22.
Semimanufactures	49	62	--	All from West Germany.
Manganese:				
Ore and concentrate, metallurgical-grade[2] thousand tons	457	332	--	U.S.S.R. 323.
Oxides	60	257	--	Spain 240; Japan 17.
Molybdenum:				
Ore and concentrate	327	945	--	Belgium-Luxembourg 615; Netherlands 270; West Germany 60.
Oxides and hydroxides	28	--	--	--
Metal including alloys, all forms	3	20	3	United Kingdom 14; France 3.
Nickel:				
Ore and concentrate	47	--	--	--
Matte and speiss, Ni content	1,162	--	--	--
Oxides and hydroxides	2,261	--	--	--
Metal including alloys:				
Unwrought[2]	6,558	5,473	--	U.S.S.R. 3,971; United Kingdom 497; Finland 409.
Semimanufactures	36	34	--	West Germany 26; United Kingdom 4; Austria 1.
Platinum-group metals: Metals including alloys, unwrought and partly wrought value, thousands	$1,634	$2,063	--	West Germany $1,870; United Kingdom $184; Switzerland $8.
Rare-earth metals including alloys, all forms	--	2	--	All from West Germany.
Selenium, elemental	1	1	--	All from United Kingdom.
Silver: Metal including alloys, unwrought and partly wrought value, thousands	$3,914	$3,959	--	Yugoslavia $3,498; West Germany $428; Switzerland $20.
Tin:				
Oxides	1	1	--	All from United Kingdom.
Metal including alloys, unwrought[2]	3,058	3,200	--	United Kingdom 1,151; Indonesia 855; Bolivia 816.
Titanium:				
Ore and concentrate	563	150	--	West Germany 90; Netherlands 60.
Oxides	465	657	--	United Kingdom 417; West Germany 240.
Metal including alloys, all forms	7	--	--	--
Tungsten:				
Ore and concentrate	41	62	--	All from Netherlands.
Oxides ad hydroxides	--	4	--	All from France.
Metal including alloys, all forms	1	6	--	France 3; Japan 2; Netherlands 1.
Zinc:				
Ore and concentrate	1,916	--	--	--
Blue powder	--	4,465	--	Yugoslavia 3,864; Belgium-Luxembourg 601.
Metal including alloys:				
Unwrought[2]	58,000	61,000	--	Bulgaria 14,000; Yugoslavia 12,000; Finland 10,000.
Semimanufactures	7,145	1,673	--	Poland 1,202; Yugoslavia 452; United Kingdom 19.
Zirconium:				
Ore and concentrate	2,307	2,251	21	West Germany 1,908; Italy 322.
Metal including alloys, all forms	1	--	--	--
Other:				
Ores and concentrates	470	75,330	--	All from Norway.
Oxides and hydroxides	12	112	--	West Germany 107; United Kingdom 5.
Base metals including alloys, all forms	47	55	(3)	Austria 33; Finland 19; France 1.
Nonferrous metals and alloys, rolled[2]	11,000	15,000	--	All from U.S.S.R.
INDUSTRIAL MINERALS				
Abrasives, n.e.s.:				
Natural: Corundum, emery, pumice, etc	276	209	--	Italy 205; West Germany 3; Yugoslavia 1.
Artificial:				
Corundum	223	3,265	--	Yugoslavia 1,625; Hungary 1,592; Japan 36.
Silicon carbide	248	209	--	Italy 207; Japan 2.

See footnotes at end of table.

Table 3.—Czechoslovakia: Apparent imports of mineral commodities[1] —Continued

(Metric tons unless otherwise specified)

Commodity	1985	1986[p]	Sources, 1986: United States	Sources, 1986: Other (principal)
INDUSTRIAL MINERALS —Continued				
Abrasives, n.e.s. —Continued				
Dust and powder of precious and semiprecious stones including diamond: value, thousands	$1,109	$5	$4	West Germany $1.
Grinding and polishing wheels and stones	632	566	(3)	West Germany 282; Austria 198; France 23.
Asbestos, crude[2]	46,783	46,203	--	U.S.S.R. 32,653; Canada 4,645; Zimbabwe 3,168.
Barite and witherite	20	41	--	West Germany 40; Italy 1.
Boron materials:				
Crude natural borates	5,400	20	--	All from Finland.
Oxides and acids	440	219	--	Netherlands 128; West Germany 91.
Cement[2] thousand tons	77	76	--	East Germany 39; U.S.S.R. 33.
Chalk	1,487	1,114	--	Austria 725; France 389.
Clays, crude:				
Chamotte earth	--	1	--	All from Yugoslavia.
Kaolin	8,035	7,698	--	Hungary 6,172; United Kingdom 1,491; West Germany 35.
Unspecified	885	301	--	West Germany 140; France 122; Austria 39.
Diamond:				
Gem, not set or strung: value, thousands	$39	$282	--	Belgium-Luxembourg $233; Switzerland $34; Netherlands $15.
Industrial stones do	$1,512	$1,005	$26	Switzerland $554; Belgium-Luxembourg $424.
Diatomite and other infusorial earth	2,878	1,881	--	Iceland 1,299; France 332; Austria 197.
Feldspar, fluorspar, related materials:				
Feldspar	--	97	--	All from Yugoslavia.
Fluorspar	144	144	--	All from West Germany.
Unspecified	1,080	900	--	All from Finland.
Fertilizer materials: Manufactured:				
Ammonia	50	3,407	--	Hungary 3,382; Belgium-Luxembourg 25.
Nitrogenous, N_2 content[2] thousand tons	174	185	--	U.S.S.R. 168.
Phosphatic, P_2O_5 content do	[4]124	[4]142	24	Tunisia 10; Yugoslavia 7; unspecified 93.
Potassic, K_2O content[2] do	556	572	--	East Germany 396; U.S.S.R. 160.
Unspecified and mixed do	4	64	--	Austria 63; Yugoslavia 1.
Graphite, natural	307	357	--	Japan 248; West Germany 109.
Gypsum and plaster[2] thousand tons	26	23	--	East Germany 22.
Iodine	--	1	--	All from Italy.
Lime	21	33	--	West Germany 29; Austria 4.
Magnesium compounds:				
Magnesite, crude	--	64	--	All from Netherlands.
Oxides and hydroxides	1,617	857	38	France 383; Austria 296; West Germany 140.
Other	--	1,116	--	All from West Germany.
Mica:				
Crude including splittings and waste	24	55	--	Austria 29; France 26.
Worked including agglomerated splittings	18	3	--	Austria 2; Switzerland 1.
Nitrates, crude	--	1,673	--	All from Bulgaria.
Phosphates, crude, P_2O_5 content[2] thousand tons	282	273	--	U.S.S.R. 125; Morocco 41; Jordan 36.
Pigments, mineral:				
Natural, crude	20	56	--	France 32; West Germany 24.
Iron oxides and hydroxides, processed	1,175	367	--	Belgium-Luxembourg 357; Italy 10.
Precious and semiprecious stones other than diamond:				
Natural value, thousands	$22	$27	--	Thailand $13; West Germany $10; Switzerland $4.
Synthetic do	$33	$72	--	Switzerland $61; Austria $5; Belgium-Luxembourg $5.
Pyrite, unroasted	32	20	--	All from Italy.
Salt and brine	139,964	150,342	--	U.S.S.R. 150,320; Belgium-Luxembourg 17; Sweden 3.
Sodium compounds, n.e.s.:				
Carbonate, manufactured[2] thousand tons	203	186	--	East Germany 82; Bulgaria 36; Romania 22.
Sulfate, manufactured	1	--		

See footnotes at end of table.

Table 3.—Czechoslovakia: Apparent imports of mineral commodities[1] —Continued

(Metric tons unless otherwise specified)

Commodity	1985	1986[p]	Sources, 1986	
			United States	Other (principal)
INDUSTRIAL MINERALS —Continued				
Stone, sand and gravel:				
Dimension stone:				
Crude and partly worked	NA	13,667	--	Yugoslavia 12,117; Hungary 1,458; Italy 56.
Worked	1,829	146	--	Italy 66; Yugoslavia 56; Spain 13.
Dolomite, chiefly refractory-grade	91	111	--	All from West Germany.
Gravel and crushed rock	5,944	7,809	--	Yugoslavia 4,079; Italy 2,660; France 1,070.
Quartz and quartzite	970	1,168	--	All from West Germany.
Sand other than metal-bearing	4,701	4,565	--	Hungary 3,935; West Germany 303; Belgium-Luxembourg 292.
Sulfur:				
Elemental:				
Crude including native and by-product[2] thousand tons	505	466	--	All from Poland.
Colloidal, precipitated, sublimed	70	21	--	All from France.
Dioxide	261	262	--	All from West Germany.
Sulfuric acid[2]	73,980	71,274	--	U.S.S.R. 66,166; East Germany 5,011.
Talc, steatite, soapstone, pyrophyllite	1,516	1,520	--	Austria 913; Belgium-Luxembourg 421; West Germany 145.
Other:				
Crude	10,242	7,991	--	Hungary 4,896; West Germany 2,521; Finland 469.
Slag and dross, not metal-bearing	111	94	--	All from Netherlands.
MINERAL FUELS AND RELATED MATERIALS				
Asphalt and bitumen, natural	60	59	--	All from West Germany.
Carbon black[2]	16,422	14,666	--	U.S.S.R. 9,080; Romania 2,670; East Germany 1,129.
Coal:[3]				
Anthracite and bituminous thousand tons	4,686	4,896	--	U.S.S.R. 3,125; Poland 1,671.
Lignite including briquets do	736	658	--	All from East Germany.
Gas, natural: Gaseous[4] million cubic feet	381,785	408,907	--	All from U.S.S.R.
Peat including briquets and litter	--	68	--	All from United Kingdom.
Petroleum:				
Crude[4] thousand 42-gallon barrels	124,215	130,830	--	Mainly from U.S.S.R.
Refinery products:				
Liquefied petroleum gas do	(3)	(3)	--	All from West Germany.
Gasoline[4] do	3,859	3,145	--	NA.
Mineral jelly and wax do	7	6	--	West Germany 5.
Kerosene and jet fuel do	46	42	--	West Germany 26; Yugoslavia 8; Italy 5.
Distillate fuel oil[4] do	50	213	--	NA.
Lubricants do	237	163	(3)	Austria 116; Yugoslavia 26; West Germany 10.
Residual fuel oil do	92	13	--	All from United Kingdom.
Bitumen and other residues do	17	--	--	--
Bituminous mixtures do	(3)	(3)	--	Mainly from Austria.
Petroleum coke do	44	41	--	All from West Germany.

[p]Preliminary. NA Not available.

[1]Table prepared by Jozef Plachy. Owing to a lack of official trade data published by Czechoslovakia, this table should not be taken as a complete presentation of this country's mineral trade. Unless otherwise specified, these data have been compiled from United Nations information and data published by the trading partner countries.

[2]Official Trade Statistics of Czechoslovakia.

[3]Less than 1/2 unit.

[4]Statistical Yearbook of Members of the Council for Mutual Economic Assistance, Moscow, U.S.S.R.

COMMODITY REVIEW

METALS

Gallium.—About 3,500 kilograms of 99.9% and 99.99%-pure gallium metal was produced at the Ziar and Hronom alumina refinery in 1987. Output was expected to rise to at least 4,000 kilograms by the end of the decade, as the country was engaged in the manufacture of high-speed gallium arsenide integrated circuits. In addition, it was expected that the gallium would be used in superconductors. Particularly noteworthy were the experimental use of gallium as a telescopic metal target in detecting and quantifying solar neutrinos and its application in photoelectric solar cells.

Gold.—A study, sponsored in part by the Ore Research Institute of Prague, continued with a view toward determining whether a 300,000-ton-per-year open pit and beneficiation facility would be constructed. In addition, the Western Australian Development Corp. and Czechoslovak Government were considering a joint venture to treat old dumps from former gold mine operations.

Gold prospecting continued with vigor during 1987. Mining was expected to resume in the central region of the Vultana River Basin and in South Bohemia by the end of the decade. The open pit mine at Celina Morkrsko was scheduled to restart by 1990. Reserves there were thought to amount to 100 tons of gold. Plans also called for the development of reserves in the western Carpathians, as well as exploration of gold-scheelite deposits in Karpenske Hory in Bohemia and Soviansko in Slovakia.

Iron and Steel.—Emphasis was switched from the production of crude steel to the production of semimanufactures and finished products. Accordingly, modernization plans were focused on the construction of new facilities for the continuous casting of steel. Production of steel castings and forgings was scheduled to rise to 50% of total steel output by 1995. Particularly significant in this regard were improvements made to the Smervna steelworks at Podbrozova where an Asea/SKF (Sweden) electromagnetic stirrer was attached to a continuous casting machine to improve the quality of the continuously cast billets used for tube production.

Much of the steelmaking process at the iron and steel works in Czechoslovakia was becoming controlled by computers and microprocessors. Noteworthy was construction of the final processing shops and automated storage of finished products at the Poldi steel plant at Kladno, where a modern 450,000-ton-per-year medium and light section rolling mill supplied by Sket (German Democratic Republic) was installed, and a 100-ton-per-year electric arc furnace was modified to include water-cooled panels. The rolling mill was to produce medium and light bars of high-quality carbon steel and ferritic stainless steel. In an effort to conserve energy and other resources, two old rolling mills at the Kralodvorske works in Beroun and the sheet mill in Frydek-Mistek were eliminated. The East Slovakia iron and steel combine, working with Clecim, the French concern, modernized its cold-sheet mill and overhauled its hot wide strip operation at Kosice in eastern Czechoslovakia. The modernization was expected to achieve higher dimensional accuracy for its strip products.

Other developments of importance were the startup of an Asea/SKF (Sweden) secondary steelmaking plant at the Skoda steelworks in Plzen. Reportedly, steel production at that facility increased 20% as a result of the new plant. Another secondary steelmaking plant, furnished with powder injection equipment, was provided by Scandinavian Lancers and brought on-line at the Vitkovice steelworks at Ostrava.

Tin.—Tin mining was renewed at the Stannum Mine, 100 kilometers west of Prague. The ore body consists of tin and tungsten, with smaller amounts of mica, minor sulfides, and topaz also occurring. Output was expected to reach 250,000 tons of ore processed per year. The Czechoslovak Government invested 500 korunas (Kcs)[2] in the project.

Other Metals.—Work continued on construction of a metallurgical complex in Bruntal, North Moravia, which was expected to process 60,000 tons of base metal concentrates from copper, lead, and zinc ores, as well as rare elements. The Tiscova copper mine in Bohemia was overhauled for more productive operation, while copper ore bodies at Banska Stiavnica, Slovinky, and Maria near Roznava continued to be exploited. In Central Bohemia, further identifications of lead and zinc ores were made, as were discoveries of new zinc deposits in the Zelezne Hory Mountains. In addition, a new lead and zinc mine in Zlate Hory-East was opened.

INDUSTRIAL MINERALS

The prominent producers of kaolin were Chlumcanske Keramicke Zavody, Keramicke a Sklarske Suroviny, Moravske Keramicke Zavody, and Zapodceske Keramicke Zavody. Much of the kaolin for the ceramic industry was mined in the Karlovy Vary region of Czechoslovakia, and kaolin supplied to the paper industry was mined in the Plzen Basin. Ore was mined by open pit methods and beneficiated via sizing and high-intensity magnetic removal of impurities. Annual output was about 575,000 tons, with kaolin reserves estimated at 60 million tons.

MINERAL FUELS

Coal.—Coal accounted for 70% of the national fuel requirement. Coal exploration continued in several parts of the country. Approximately 1.5 million tons of coking coal was identified in the Ostrava-Karviná Basin. Although bituminous coal reserves of 4.5 million tons were also identified at Ostrava, their location, 600 to 1,000 meters below the surface, posed technical impediments to output. Lignite reserves there were measured at 5.5 million tons and were expected to be depleted within 30 years.

Natural Gas.—Work neared completion on a Czechoslovak-built natural gas pipeline that would carry Soviet natural gas through Czechoslovakia to customers in Austria, the Federal Republic of Germany, Italy, and Yugoslavia. Deliveries taken by Czechoslovakia itself were to serve as compensation for the construction work. Utilizing pipes, 55 inches in diameter, the 2,607-mile line was expected to increase Czechoslovakia's annual consumption of Soviet natural gas by 450 billion cubic feet by 1989. During 1987, the country imported 380 billion cubic feet of natural gas from the Soviet Union, and produced about 25 billion cubic feet, roughly 7% of its known reserves. In tandem with plans to replace oil and manufactured coal gas with natural gas for residential and industrial uses, exploration of South Moravia, and southern and eastern Slovakia continued. Results suggested that future output of as much as 70 billion cubic feet per year was possible.

Nuclear Power.—In 1987, a sixth and seventh nuclear reactor commenced operations at the Dukovany and Jaslorce Bohunice plants. The facilities together produced about 25% of Czechoslovakia's electricity. Work on a 440-megawatt plant at Mochovitse continued, as did construction of a 1,000-megawatt reactor at Temelin. The Mochovitse reactor was expected to start in 1992.

In light of the Chernobyl accident, the Czechoslovak atomic power program began investing in making the country's nuclear powerplants more resistant to natural disasters, such as earthquakes. Estimates valued the investment as equal to a 1-year capital outlay for the entire fuel and power sector of the Czechoslovak economy.

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[1]Physical scientist, Division of International Minerals.

[2]The Czechoslovak koruna (Kcs) is not convertible to U.S. dollars, and as such, values are expressed in korunas. The official exchange rate does not reflect comparative values of the two currencies.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1989— 242-377/82069